



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/686,591 Confirmation No. 9373  
Applicant : Friedrich Boecking  
Filed : October 17, 2003  
TC/A.U. : 3747  
Examiner : Unknown  
  
Docket No. : R.303412  
Customer No. : 02119

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Date: October 27, 2004

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97(b),  
AND EXPLANATION OF THE RELEVANCE OF THE CITED PRIOR ART**

Sir:

The undersigned hereby requests that the prior art cited on the attached prior art statement be placed of record in the application file and be considered by the examiner.

This citation of prior art is made under 37 CFR 1.97(b), since it is being filed before the mailing date of the first office action.

The relevance of the prior art cited on the attached form 1449 is as follows:

**DE 41 15 477 A1**

This patent teaches an injection nozzle for an internal-combustion engine. The nozzle has a hollow needle controlling a first group of injection holes which is loaded by a first spring towards its closure position. Inside the hollow needle (6) is a concentric inner needle (12), which is loaded towards its closure position by a second spring. At least one of the needles works in conjunction with a piston (17) which closes a cylinder chamber in the nozzle holder (1). A switch component (19) can be positioned such that the cylinder chamber of the piston can be fed with an injection pressure. When this occurs the piston loads the needles in the direction of their closure position. The inner needle (12) is connected to the piston (17) via an operating rod (15). The primary advantage is that the injection hole cross-section is adjusted according to the actual running state of the engine.

**EP 0 967 383 A2**

This patent teaches a fuel injector which comprises an outer valve needle (14) and an inner valve needle (30) slidable within a bore (28) formed in the outer valve needle (14). The inner end of the inner valve needle (30) is located within the bore (28) and is provided with a recess (34) whereby the application of fuel under pressure to the bore (28) deforms the inner valve needle (30) to form a substantially fluid tight seal between the inner and outer valve needles (14, 30). The inner and outer needles (14, 30) may be exposed to the fuel pressure within a common control chamber (46). A single actuator arrangement is used to control the movement of both needles (14, 30).

**EP 0 978 649 A2**

This patent teaches a fuel injection nozzle body (12) consisting of a tip (10) with two axially separate rows of injection holes (14,16) and a nozzle needle (20) axially movable in the nozzle body. A conical surface (22) on the needle tip selectively frees and blocks the fuel path to the injection holes. A protruding insertion body (30) on the needle tip moves axially with respect to the needle. In the closed state the conical surface is in contact with the first, upper row (14) of injection holes on the inside of the tip and a wedge body (32) is in contact with the inside of the tip between the rows of holes. After raising the conical surface to free the fuel path to the first row the wedge body frees the fuel path to the second, lower row (16) of holes.

**EP 1 063 415 A2**

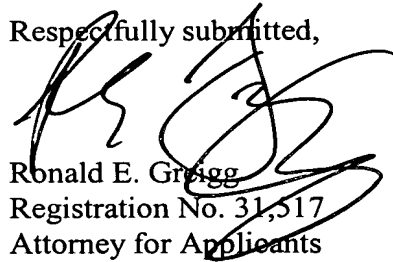
This patent teaches a fuel injector comprising a nozzle body (10) having a first bore (11) defining first and second seatings (13, 22) and an outer valve member (12) slidable within the first bore (11). The bore is engageable with the first seating (13) to control fuel flow from a first outlet opening (14) located downstream of the first seating (13). The outer valve member (12) is provided with a through bore (17) and an inner valve member (20) is slidable within the through bore (17). The outer valve member is engageable with a second seating (24) to control fuel flow from a second outlet opening (24). The through bore (17) defines a step (27) which is engageable with an enlarged region (20a) of the inner valve member (20). During fuel injector assembly, the through bore (17) permits insertion of the inner valve member (20) into the through bore (17) through an end of the through bore (17).

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IDS filed October 27, 2004  
Prior to first Office Action

remote from the first and second outlet openings (14, 24). This patent also teaches a method for assembling such a fuel injector.

Examination of this application is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. Greigg', is written over the printed name and title.

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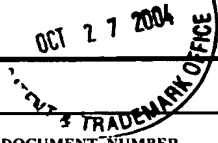
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# INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

OCT 21 2004



Docket Number (Optional)

R.303412

Application Number

10/686,591

Applicant(s)

Friedrich Boecking

Filing Date

10-17-2003

Group Art Unit

3747

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

## U.S. PATENT APPLICATION PUBLICATIONS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

## FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
							YES	NO
		DE 41 15 477 A1	11-21-1991	Germany				✓
		EP 0 967 383 A2	12-29-1999	European			✓	
		EP 0 978 649 A2	02-09-2000	European				✓
		EP 1 063 415 A2	12-27-2000	European			✓	

## OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.